

CLAIMS

What is claimed is:

A 1. A method comprising:

5 receiving a signal strength indicator that indicates a power level of a coupled signal from a local wireless transmitter at a local wireless receiver; and

tuning an active cancellation circuit to reduce the signal strength indicator, said active cancellation circuit to generate a cancellation signal to combine with the coupled signal at the local wireless receiver.

10 2. The method of claim 1 wherein the local wireless receiver and at least one of the local wireless transmitter and at least one additional local wireless transmitter operate in a same frequency band.

15 3. The method of claim 1 wherein tuning the active cancellation signal comprises:

measuring a first level of the signal strength indicator;

adjusting an active cancellation control signal in a first direction;

measuring a second level of the signal strength indicator;

further adjusting the active cancellation control signal in the first direction if the

20 second level is lower than the first level; and

adjusting the active cancellation control signal in an opposite direction if the second level is higher than the first level.

A 4. The method of claim 3 wherein tuning the active cancellation signal further comprises:

iteratively measuring the signal strength indicator and either further adjusting the active cancellation control signal or adjusting the active cancellation control signal in the opposite direction depending on a comparison of a current measurement of the signal strength indicator and a previous measurement of the signal strength indicator.

5 10 5. The method of claim 4 wherein the active cancellation control signal locks after adjustment of the active cancellation control signal has switched directions at least twice.

6. The method of claim 4 wherein the active cancellation control signal comprises a first dimension control signal, and wherein tuning the active cancellation signal further comprises:

15 iteratively measuring the signal strength indicator and either adjusting a second dimension control signal in the first direction or adjusting the second dimension control signal in the opposite direction depending on a comparison of a current measurement of the signal strength indicator and a previous measurement of the signal strength indicator.

20 7. The method of claim 6 wherein the method further comprises:

switching from tuning the first dimension control signal to tuning the second dimension control signal when the first dimension control signal locks; and

A switching from tuning the second dimension control signal to tuning the first dimension control signal when the second dimension control signal locks.

8. The method of claim 4 wherein the active cancellation control signal is initially
5 adjusted by a first step size and adjusted by a smaller step size once the active cancellation control signal has locked at least once.

9. The method of claim 4 wherein the signal strength indicator is initially measured over
10 a first integration time and measured over a longer integration time once the active cancellation control signal has locked at least once.

10. The method of claim 1 wherein tuning the active cancellation circuit is based on at least one of a plurality of tuning steps sizes and a plurality of integration times.

11. The method of claim 1 wherein, when tuned, the cancellation signal is to reduce a
15 second coupled signal at the local wireless receiver, said second coupled signal being from at least one additional local wireless transmitter.

12. The method of claim 1 wherein the active cancellation circuit is tuned to a center
20 frequency of the local wireless receiver.

13. The method of claim 1 further comprising:

A enabling tuning only when the local wireless transmitter is an only local wireless transmitter that is transmitting and when the local wireless receiver is not being used to receive a signal from a remote transmitter.

- 5 14. The method of claim 1 wherein tuning the active cancellation circuit comprises making adjustments to an active cancellation control signal, the method further comprising:

detecting when at least one local wireless transmitter is transmitting and the local wireless receiver is being used to receive a signal from a remote transmitter; and

- 10 providing the active cancellation control signal at a particular level.

15 15. The method of claim 14 wherein the particular level of the active cancellation control signal comprises a most recently tuned level.

- 16 16. The method of claim 14 wherein providing the active cancellation control signal at the particular level comprises:

identifying a center frequency of the local wireless receiver; and

retrieving the particular level of the active cancellation signal from a memory location corresponding to the center frequency of the local wireless receiver.

- 20 17. The method of claim 16 wherein providing the active cancellation control signal at the particular level further comprises:

identifying additional center frequencies of the local wireless receiver as the local wireless receiver frequency hops; and

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retrieving additional particular levels of the active cancellation control signal from additional memory locations corresponding respective ones of the additional center frequencies.

- 5 18. The method of claim 1 wherein tuning the active cancellation circuit comprises:
- making adjustments to an active cancellation control signal; and
 - populating a memory with particular levels of the active cancellation control signal corresponding to a plurality of center frequencies of the local wireless receiver as the local wireless transmitter frequency hops among the plurality of center frequencies.

10 19. The method of claim 1 wherein the active cancellation circuit comprises a first variable gain bi-phase attenuator, a second variable gain bi-phase attenuator, and a summer to combine outputs from the first and the second variable gain bi-phase attenuators to produce the cancellation signal, and wherein tuning the active

15 cancellation circuit comprises:

- adjusting a gain on a model of a signal from the local wireless transmitter through the first variable gain bi-phase attenuator;
- adjusting a gain on a quadrature of the model of the signal from the local wireless transmitter through the second variable gain bi-phase attenuator.

20 20. The method of claim 1 wherein the local wireless transmitter and the local wireless receiver comprise a full duplex communications device.

A 21. The method of claim 1 wherein the local wireless transmitter and the local wireless receiver comprise a first local wireless radio, and wherein the active cancellation circuit, when tuned, is to reduce an additional coupled signal from a second local wireless radio.

5 22. The method of claim 21 wherein the first local wireless radio and the second local wireless radio comprise two full duplex radios, two half duplex radios, or a combination of a full duplex radio and a half duplex radio.

10 23. The method of claim 1 wherein the signal strength indicator indicates the power level also from a plurality of additional local wireless transmitters.

24. A machine readable medium having stored thereon machine executable instructions to implement a method comprising:

15 receiving a signal strength indicator that indicates a power level of a coupled signal from a local wireless transmitter at a local wireless receiver; and

tuning an active cancellation circuit to reduce the signal strength indicator, said active cancellation circuit to generate a cancellation signal to combine with the coupled signal at the local wireless receiver.

20 25. An apparatus comprising:

a state machine to receive a signal strength indicator that indicates a power level of a coupled signal from a local wireless transmitter at a local wireless receiver, and

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tune an active cancellation circuit to reduce the signal strength indicator, said active cancellation circuit to generate a cancellation signal to combine with the coupled signal at the local wireless receiver.